

الف) $m^2 = y + a \rightarrow m = \pm \sqrt{y + a} \rightarrow$ (1)
 $y + a \geq 0 \rightarrow y \geq -a \quad Rf = [-a, +\infty)$

ب) $m^3 = y - 1 \rightarrow m = \sqrt[3]{y - 1} \rightarrow Rf = \mathbb{R}$

الف) $y = (m - 2)^2 + 2 \rightarrow (m - 2)^2 = y - 2 \rightarrow$ (2)
 $m - 2 = \pm \sqrt{y - 2} \quad Rf = [2, +\infty) \rightarrow y \geq 2$
 $m = \pm \sqrt{y - 2} + 2$
 $y - 2 \geq 0$

ب) $m^2 - a m + 1 - y = 0 \rightarrow m = \frac{-b \pm \sqrt{\Delta}}{2a}$
 $\frac{a \pm \sqrt{4a - 4 + 4y}}{2} = \frac{-a_1}{2} \geq y \leftarrow$
 $Rf = \left[\frac{-a_1}{2}, +\infty \right) \quad a_1 + 4y \geq 0 \quad a_1 \geq 4y$

الف) $y m^2 - 2y = m^2 + 2 \rightarrow y m^2 - m^2 = 2 + 2y$ (3)
 $m^2 (y - 1) = 2 + 2y \quad Rf = (-\infty, \frac{2}{y-1}] \cup [1, +\infty)$
 $m^2 = \frac{2 + 2y}{y - 1} \rightarrow m = \pm \sqrt{\frac{2 + 2y}{y - 1}}$
 $\frac{-\frac{2}{y-1}}{1} \leq \frac{1}{y-1}$

$$y|m| - ry = r|m| + 1 \rightarrow \quad (1)$$

$$y|m| - r|m| = ry + 1 \rightarrow |m|(y-r) = ry + 1$$

$$|m| = \frac{ry + 1}{y-r} \geq 0 \quad \frac{-\frac{1}{r}}{+\frac{1}{r} - \frac{1}{r} +}$$

$$Rf = (-\infty, -\frac{1}{r}] \cup [r, +\infty)$$

$$ym^r - ry m = 1 \rightarrow ym^r - ry m - 1 = 0$$

$$m = \frac{-b \pm \sqrt{\Delta}}{ra} \rightarrow m = \frac{ry \pm \sqrt{(ry)^2 + ry}}{ry - \frac{1}{r}}$$

$$19y^2 + ry \geq 0 \rightarrow ry(ry + 1) \geq 0 \quad \frac{ry}{+\frac{1}{r} - \frac{1}{r} +}$$

$$ry \neq 0 \rightarrow y \neq 0 \quad Rf = (-\infty, -\frac{1}{r}] \cup [0, +\infty)$$

$$\text{الف) } \min \rightarrow d'p = \frac{-b}{ra} \rightarrow \frac{r}{r} = r \rightarrow y = -r$$

$$Rf = [-r, +\infty)$$

$$\text{ب) } \max \rightarrow d'p = \frac{-b}{ra} = \frac{-r}{-r} = r \rightarrow y = r$$

$$Rf = (-\infty, r]$$

الف) $\min \text{ طء} = \frac{-b}{2a} = \frac{4}{2} = 2 \quad y = -1$ (4)

$R_f = [-1, +\infty)$ $\sqrt{[-1, +\infty)} \rightarrow R_f = [0, +\infty)$

ب) $\max \frac{-b}{2a} = \frac{-4}{-2} = 2, y = 14$

$R_f = (-\infty, 14]$ $\sqrt{} \rightarrow R_f = [0, 14]$

الف) $R_f = \mathbb{R}$ $\sqrt{}$ $\rightarrow$ $[0, +\infty)$ (5)

ب) $R_f = \mathbb{R}$ $\sqrt{}$ $\rightarrow$ $[0, +\infty)$

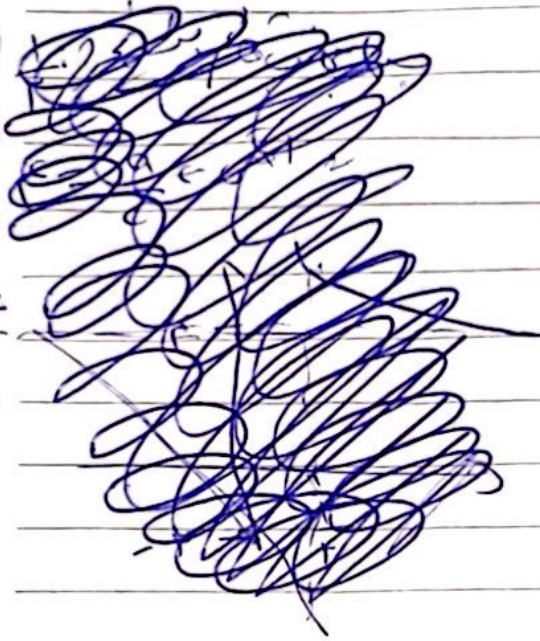
الف) $\sqrt{} = \mathbb{R} - \left\{ \frac{a}{c} \right\} \rightarrow \frac{3}{1} = 3$ $R_f = \mathbb{R} - \{3\}$ (15)

ب) $\sqrt{} = \mathbb{R} - \left\{ \frac{a}{c} \right\} \rightarrow \frac{4}{1} = 4$ $\rightarrow \mathbb{R} - \{4\}$

20 $R_f = [0, +\infty) - \{4\}$

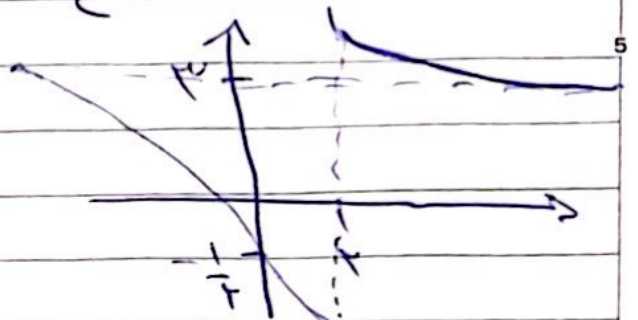
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۱۹ الف) جانب قائم سے شیبہ نکلے

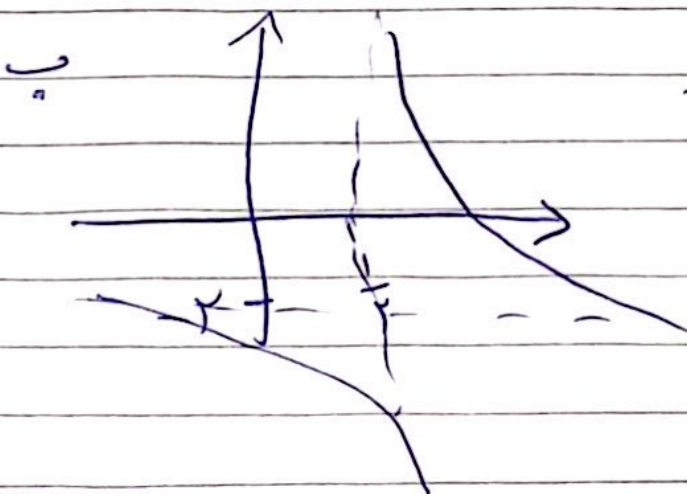
جانب اعلى $\rightarrow y = \frac{a}{x}$



۱۰ قسماً دہا میں منقسم آفر!

۱۰ الف) $R_f = [2, +\infty)$ $\rightarrow a + \frac{1}{a}$ مثبت (الف)

ب) $\int_{-\infty}^{+\infty} \left(a + \frac{1}{a} \right) \rightarrow$ مثبت و منفی $\rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$



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جانب اعلى $\rightarrow y = \frac{a}{x}$

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